Remineralization of desalinated water by limestone dissolution with carbon dioxide

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ABSTRACT

A commonly used remineralization process involves bringing CO\textsubscript{2}-acidified desalinated water in contact with a bed of limestone. Dissolution of limestone provides two essential ingredients to the water: bicarbonate alkalinity and calcium content. The kinetics of limestone dissolution with CO\textsubscript{2} was studied as a function of inlet CO\textsubscript{2} concentration, water flow velocity, and temperature. The experimental data conformed very well to the Yamauchi model. Optimal design of a hardening column is discussed.

Keywords: Desalinated water; Hardening; Calcite dissolution; Kinetic model; Optimal design